KITFOX™ OWNERS MANUAL

Model II

(04/03/91)

Serial Number . . . . . _____

Engine Model . . . . . _____

Engine Serial Number . . . . . _____

Registration Number . . . . . _____

Date Delivered . . . . . _____

Date Completed . . . . . _____

Builders Name . . . . . _____

Date Approved for Flight . . . . . _____

Approved By . . . . . _____

The KITFOX™ is a two-place, folding-wing, amateur-built kitplane that offers economical super-STOL performance and can be towed home to store in the garage. The KITFOX™ is built under the Federal Aviation Regulation (FAR) part 21.191.(g) as amended by Advisory Circular #20-27C, April 1, 1983. The operator of this KITFOX™ should become familiar with those regulations and operate this aircraft according to those guidelines.

KITFOX™ owners in countries other than the U.S. should build and operate their KITFOX™ in accordance with the local civil aviation authority.

Denney Aerocraft Company, the supplier of the KITFOX™ aircraft kit, maintains a list of current owners of KITFOX™es, but it is the responsibility of the seller and new owner to notify us in the event of a sale. Every KITFOX™ owner is entitled to know about any changes, improvements, or potential problems with his aircraft.

CONTENTS

Specifications KITFOX™ Model II

Engine	Rotax 582LC	Rotax 912
Horsepower	65 @ 6500	80 @ 5500 RPM
Torque	65 ft lbs @ 5700 RPM 88.1 N-M @ 5700 RPM	76 ft lbs @ 4800 RPM 103.0 N-M @ 4800 RPM
Gross weight (lb.)/(kgs.) Model III	950 lbs	950 lbs
Power Loading	16.2 lb/hp	13.1 lb/hp
Empty weight (lb.)/(kgs.)	440/200	485/220.5
Useful load (lb.)/(kgs.)	610/277.3	565/256.8
Wing span	32 ft 0 in/9.75 m	32 ft 0 in/9.75 m
Wing area	126.2 ft²/11.72 m²	126.2 ft²/11.72 m²
Wing Loading	1.94 ft²/hp	1.52 ft²/hp
Chord length	42 in./1.07 m	42 in./1.07 m
Chord length (including flaperons)	51 in./1.30 m	51 in./1.30 m
Aspect ratio	8	8
Length	17 ft. 8 in./5.34 m	17 ft. 10 in./5.42 m
Wings folded	21 ft. 1 in. 6.40 m	21 ft. 3 in./6.47 m
Width (wings folded)	7 ft. 10 in./2.39 m	7 ft. 10 in./2.39 m
Height	67 in./1.70 m	67 in./1.70 m
Tread width (mains)	4 ft. 9 in./1.45 m	4 ft. 9 in./1.45 m
Wheel base (Mains to tailwheel)	13 ft. 8 in./4.17 m	13 ft. 8 in./4.17 m
Tire size (main)	20 x 7.00 x 8 in.	20 x 7.00 x 8 in.
Tailwheel diameter	6.5 in./.165 m	6.5 in./.165 m
Fuel capacity		
(std. fuel tank)	9.75 gal./36.9 l.	N/A
(small wing tank ea.)	6.0 gal. 22.7 l.	6.0 gal/22.7 l.
(header tank)	1.5 gal./5.7 l.	1.5 gal/5.7 l.
(large wing tank ea.)	13.5 gal./51.1 l.	13.5 gal./51.1 l
Cabin max. width	39.5 in./1.0 m	39.5 in./ 1.0 m
Reduction unit (standard)	2.58:1 gear	2.27:1 gear
(optional)	2.62:1 gear 3:1 gear	
Propeller (standard)	66 in./1.68 m 3-blade wood fixed pitch	68 in./1.72 m 3-blade wood fixed pitch
Propeller (optional)	66 in./1.68 m 3-blade wood ground adjustable	68 in./1.72 m 3-blade wood ground adjustable

Performance KITFOX™ Model II	Rotax 582LC	Rotax 912
Stall speed		
Solo, Power on	27 mph (43.5 km/h)	26 mph (43.5 km/h)
Solo, Power off	30 mph (48.3 km/h)	31 mph (49.9 km/h)
Dual, Power on	32 mph (51.5 km/h)	30 mph (48.3 km/h)
Dual, Power off	35 mph (56.3 km/h)	35 mph (56.3 km/h)
Cruise speed maximum	85 mph (136.8 km/h) dual 87 mph (140.0 km/h) solo	85 mph (136.8 km/h) dual 87 mph (140.0 km/h) solo
Max speed V_{ne} (with flaperon Mass Balance units installed)	100 mph (160.9 km/h)	100 mph (160.9 km/h)
Take off run-ft (solo/dual)	75 ft/200 ft 22.8 m/61 m	75 ft/200 ft 22.8 m/61 m
Landing roll-ft (solo/dual)	100 ft./250 ft. (30.5 m/61.0 m)	100 ft./250 ft. (30.5m/61.0 m)
Rate of climb		
(solo) 625 lb gross	1600 fpm(8.13 m/sec)	1800 fpm (9.15m/sec)
(dual) 1050 lb gross	1200 fpm(6.10 m/sec)	1300 fpm (6.61m/sec)
Best rate of climb speed(mph)	55 mph (88.5 km/hr)	55 mph (88.5 km/hr)
Best angle of climb speed	45 mph (72 km/h)	45 mph (72 km/h)
Best glide speed	55 mph (88.5 km/h)	55 mph (88.5 km/h)
Maneuvering speed	70 mph (112.7 km/h)	70 mph (112.7 km/h)
Service ceiling (estimated)	15,000 ft (4590 m)	15,000 ft (4590 m)
Fuel consumption		
65 mph cruise	2.1 gph/7.9 lph	2.4 gph/9.1 lph
85 mph cruise	3.7 gph/14.0 lph	3.2 gph/12.1 lph
Range @ 65 mph/104 Km/hr		
Standard fuel, 1.5 gal reserve	255 m/410 km	223 m/359 km
13.5 gal fuel, 1.5 gal reserve	371 m/597 km	325 m/523 km
28.5 gal fuel, 1.5 gal reserve	835 m/1345 km	731 m/1177 km
Range @ 85 mph/136 Km/hr		
Standard fuel, 1.5 gal reserve	190 m/306 km	219 m/353 km
13.5 gal fuel, 1.5 gal reserve	275 m/443 km	319 m/514 km
28.5 gal fuel, 1.5 gal reserve	620 m/998 km	717 m/1154 km

NOTE: Performance data has been compiled from flight tests of factory prototype aircraft. Aircraft built by others may vary slightly and exhibit slightly different flight characteristics. These figures can be used as a general guide, but each builder should conduct his own flight test program to determine the exact performance of his own aircraft.

FUSELAGE

The KITFOX™ fuselage is a rigid structure built of 4130 chrome molybdenum steel tubing. The wire used in the MIG welding process has higher tensile strength than the tubing, and the gas mixture used enhances ductility and rust resistance. Critical areas such as the strut attach points are stress relieved in the jig. Most control parts are TIG-welded for a neater appearance.

Many KITFOX™ builders use Stits Epoxy Chromate Primer to protect the steel fuselage and other steel parts against rust and corrosion. Since about 1 November 1990, Denney Aerocraft Company has offered as an option a baked-on "powder coat" finish available in any of several colors.

The fuselage is covered with 1.8 oz./yd dacron bonded to the frame with Stits Poly-Tac, heat-shrunk and sealed with Stits Poly-Brush. Most builders use Stits Poly-Spray as an ultra-violet light barrier and undercoat, and Stits Poly-Tone and Aero-Thane to provide a beautiful, durable finish coat.

LANDING GEAR AND BRAKES

The KITFOX™ landing gear is of conventional design with 4130 chromoly main gear weldments and rubber bungees. The main wheels use 20" x 7.00" x 8" balloon type tires. Inflation pressure of 9 psi (pounds per square inch) allows soft landings and uniform tire wear. Each KITFOX™ kit includes a 6-inch diameter steerable, full swiveling tail wheel. Some early Model 1 KITFOX™ are equipped with cable-operated mechanical drum brakes, but virtually all Model 2's and Model 3's are equipped with hydraulic disc brakes.

NOTE: Use only MIL SPEC H-5606E Brake Fluid in the hydraulic system. Do not use automotive brake fluid or hydraulic fluid, it is not compatible with the seals in aircraft brakes.

CONTROL SYSTEM AND SURFACES

The vertical fin, rudder, horizontal stabilizer, and elevator are all built of tubular 4130 chromoly steel tubing and are fabric covered. The control surface hinges have polyethylene bushing inserts, so do not require lubrication. Steel struts brace the horizontal stabilizer to the fuselage.

The KITFOX™ is equipped with full span flaperons that function both as flaps and as ailerons. The flaperons have a 3/4 inch tubular aluminum spar and are covered with an aluminum skin bonded with 3-M "Scotch Weld" over a high-density foam core. The flap control lever is in the center of the cabin in front of the seat where it is readily accessible to either pilot. It is used to adjust flaperon deflection from 0° to 23°. The flaperon handle serves as the pitch trim control. Small adjustments of the flaperon angle of attack (AOA) changes the angle of attack of the wing, permitting very precise airspeed control. The flaperon handle hinges on a friction pad that allows smooth adjustment of the flaperons and holds the flaperon handle wherever it is set.

The full span flaperons also serve as ailerons. They are mounted on hangers behind and below the trailing edge of the wing so they provide powerful roll control even after a good portion of the

wing has stalled. Aileron input from the stick and flap input from the flaperon control handle are coordinated through the unique mixer bellcrank behind the seat to allow full aileron action at any flap setting. The flaperons are hinged near the center of pressure, so aileron control forces are light.

The flaperons and elevator are linked to the dual control sticks by a system of bellcranks and push-pull tubes with aircraft quality rod ends. Aircraft quality 3/32" diameter cables connect the rudder to the rudder pedals.

A vernier type throttle control similar to ones used on many other aircraft is provided as standard equipment in the KITFOX™ kit.

WINGS

Several factors contribute to the extraordinary short-field performance of the KITFOX™. One of these is the unique design of the wing. It is a constant-chord, high-camber, high-lift airfoil equipped with full-span flaperons. This airfoil achieves a C_L Max of 2.8 with flaps applied. Distinctive fiberglass drooped wingtips enhance the slow flight characteristics of the KITFOX™. The two spars are identical 2.5-inch diameter tubes of 6061T6 aluminum, with 4 1/2-foot long "I-Beam" type internal stiffeners riveted in place over the strut attach points. The front spar forms the leading edge of the wing. Aluminum diagonal braces between the spars contribute to the structural integrity of the wing. They are anchored to the spars with steel brackets rivetted in place. The wooden ribs also serve as compression struts and are bonded to the spars with epoxy structural adhesive. The adhesive used is 3M "Scotch-Weld", an extremely durable and strong adhesive that is widely used in the aircraft industry. The wing is covered with dacron fabric bonded to the ribs, leading edge and trailing edge with Stits Poly-Tac, then heat-shrunk and sealed with Stits Poly-Brush. Most builders elect to finish the wing with Stits Poly-Spray, the "silver" coat that protects the wing against deterioration caused by ultra-violet radiation, and Poly-Tone or Aero-Thane color coats.

FOLDING WINGS AND TOWABILITY

The wings of the KITFOX™ can be folded alongside the fuselage so the airplane can be stored in a small space. The folded airplane is less than 8 feet wide and can be towed on its own gear from the airfield to your garage or carport. This convenient feature of the KITFOX™ eliminates hangar rental, tie-down fees, exposure to weather and to a great extent, worries about theft and vandalism. The KITFOX™ wing hinges on the rear spar and the lower lift strut attach point. With practice, the wings can be folded in only 3 or 4 minutes.

To fold the wing:

1. Chock the wheels.
2. Release the 7 winged camlocks and remove the turtledeck.
3. Center the control stick laterally.
4. Remove the front spar attach pin.
5. Swing the wing back and secure it with the wing lock-back brace. (Hold the wing and swing it back gently).

NOTE: Do not fold the wing with a full wing tank. Fuel may overflow through the cap or vent and onto the wing.

The optional towbar straddles the tailwheel and attaches to the fuselage with two pins. Attachment takes about 3 minutes and you are ready to go! The airplane should not be towed on its own gear for long distances (more than 10 miles). But for trips to the airport at moderate speeds the towbar works fine. For longer trips, the KITFOX™ can be carried on a trailer without undue stress or wear. Denney Aerocraft Company offers as an option a trailer similar to the one on which we have hauled our own demonstrators tens of thousands of miles without damage. If you build your own trailer, be sure to build a bracket to support the tail during transport. This will prevent straightening or breaking the tailspring.

ENGINES, GEARBOXES AND PROPELLERS

The standard KITFOX™ engine is the liquid-cooled Rotax 582LC. The Rotax 912 (also liquid-cooled) is available as an option.

The Rotax 582LC is cooled by ram air through a specially designed radiator mounted on the belly of the KITFOX™. This fine little engine produces 65 h.p. at 6500 RPM. It is a 2-cylinder 2-cycle engine with dual electronic ignition and has an oil injection system to provide lubrication. Until late 1990, only the standard Rotax gearbox (Type "B") was fitted. It has a reduction ratio of 2.58 to 1. Late in 1990 the Type "C" gearbox became available. It is a heavier unit (6 lbs. heavier) which may be fitted with different sets of gears with reduction ratios of 2.62 to 1, 3 to 1, 3.4 to 1, or 4 to 1. Since December 1, 1990, Denney Aerocraft has offered as an option the Type "C" gearbox, usually with a 3 to 1 ratio. The 582LC Rotax engine-gearbox-prop combination produces about of 375 lbs. of static thrust which is outstanding in relationship to the empty weight of the airplane, compared to many other types of aircraft. An operator's manual is supplied with each engine for more complete information.

The Rotax 912 produces 80 h.p. at 5500 RPM. It is a 4-cycle, 4-cylinder, horizontally opposed engine designed specifically for aircraft use. It has dual ignition with two breakerless capacitor discharge systems completely independent of one another. The reduction unit is integral to the crankcase and the standard gear ratio is 2.27 to 1. The cylinders are air-cooled and the cylinder heads are liquid cooled. The Rotax 912 produces about 435 pounds of static thrust. The Rotax 912 engine is equipped with dual Bing carburetors that automatically adjust the fuel-air mixture to changes in atmospheric pressure. The kit includes a carburetor heat system similar to those used on normally aspirated engines in many certified airplanes. See the Rotax 912 Operators Manual supplied with the engine for more complete information about this fine engine.

A 66 inch diameter 3-blade wooden fixed pitch propeller is standard equipment for the KITFOX™ with the Rotax 582LC engine. A ground adjustable 3-blade prop is an option.

A 68-inch diameter 3-blade wooden fixed pitch propeller is supplied with the Rotax 912 engine. A ground adjustable prop is available.

FUEL SYSTEM

The standard fuel cell for the KITFOX™ equipped with the Rotax 582LC fits between the firewall and the instrument panel and has a capacity of 9.75 U.S. gallons. It is rotationally molded of cross link polyethylene, a very strong and durable material that withstands extremes of cold and heat. The fuel tanks of many new cars are made of this material, as are the familiar red Fire-Marshall approved "jerry" cans. The standard fuel tank cannot be used if the optional Rotax 912 engine is installed, so the builder must use any of several possible wing tank configurations and the 1 1/2 gallon header tank.

Optional 6-gallon aluminum or fiberglass wing tanks are available. Also available are 13.5 gallon fiberglass wing tanks. One or two wing tanks may be installed in conjunction with the standard fuel tank, or the standard fuel tank may be replaced by a 1 1/2 gallon cylindrical aluminum header tank. Generally, aircraft equipped with the Rotax 582LC will have the header tank installed on the back side of the firewall, while those with the Rotax 912 will have the header tank attached to fuselage crosstubes behind the seat and the mixer bellcrank.

Each wing tank has its own shut-off valve to control fuel flow into the standard tank or header tank, and there is another (primary) fuel shut-off valve at the firewall.

A vacuum-operated fuel pump (582LC) or a mechanical fuel pump (912) pumps fuel from the standard tank or header tank to the carburetors.

ELECTRICAL SYSTEM

The Rotax 582LC has a 12 volt built-in alternator that produces 165 watts @ 13.75 amps, and a 12-volt starter. A battery, regulator/rectifier, relay, and keyed start switch are included in the kit. The 12 volt battery is mounted in the fuselage aft of the seat, or on the firewall if dual wing tanks and header tank are installed. A master switch on a 30 amp. breaker activates the system. The 582LC engine features a dual ignition system with breakerless capacitor discharge (CDI).

The Rotax 912 has a 12 volt, 22-amp, 270 watt generator and a 12-volt starter. A battery, regulator/rectifier, relay, and keyed start switch are included in the kit. The battery is mounted aft of the seat. The 912 is equipped with dual CDI (capacitor discharge ignition).

FINISH

The fabric supplied with the KITFOX™ kit is 1.8 oz/yd^2 dacron. Stits Poly-Tac and Poly-Brush are provided to secure the fabric to the airframe and seal the fabric after it has been heat-shrunk. Most builders elect to provide ultra-violet protection for the fabric by applying Stits Poly-Spray, which also serves as a sanding base for the color coats of Stits Poly-Tone or Aero-Thane.

FLIGHT CHARACTERISTICS

The rigid, fabric covered fuselage of the KITFOX™ is a time-proven design similar to that of several classic airplanes, including the Piper Cub, Taylorcraft, and the Champ. Its 3-axis control system is also similar, so the general flight characteristics are similar. Its huge flaperons lend the KITFOX™ superior controllability at very low airspeeds, and its light weight, high power loading, and high lift wing contribute to its outstanding maneuverability and short take-off capability. The low wing loading of the KITFOX™ means it will be affected more by wind than larger, heavier aircraft. The KITFOX™ is not designed for flight in hazardous weather or under Instrument Flight Rules.

KITFOX™ FLIGHT TIPS

- The KITFOX™ is a high performance airplane at slow speeds. Until you are thoroughly familiar with its flight characteristics, restrict take-off power to about 75% of full power. This is plenty of power to safely operate the aircraft and the take-off roll and climb will be more comfortable and easier to manage.

- Application of flaps causes the center of lift of the wing to move aft. This causes the airplane to pitch nose down, which tendency must be countered by up elevator. The use of flaps and the resulting changes in control "feel" should be explored at altitude. Use very little or no flaps for the initial take-off in your new KITFOX™.

- You should build a stop for the flap handle to restrict flap deflection to 23°. Deflection beyond 23° tends to restrict aileron travel and effectiveness. Exercise caution on final approach in gusty or crosswind conditions not to use so much flaps that aileron effectiveness is diminished.

- Your KITFOX™ will safely land at speeds of only 33 - 35 mph. However, the airspeed will bleed off rather quickly in the flare, so it is best to carry some speed on short final. Initially, you should maintain 55 - 60 mph on final. After some practice, you can slow your final approach speed to 45 mph, solo. Do not hesitate to use power to arrest the sink rate if you find the aircraft settling too rapidly, or to use full power to go around and try again.

- The KITFOX™ has a low wing loading so you must exercise caution on rollout and while taxiing in strong winds. The large control surfaces are very effective in countering crosswinds if used properly. Most importantly, if winds are strong, GO SLOW.

- Pilots who have not flown airplanes as small as the KITFOX™ may be surprised by its responsiveness and its light control feel. You can fly it with your fingertips and tiptoes, and once mastered it is a delight to fly. The tendency of first-time KITFOX™ flyers is to over control. Don't do it! To properly execute any maneuver, some rudder input is required. Usually very little pressure is necessary, but you must use the rudder. We strongly recommend that you install a slip-skid indicator to help you "find your seat".

ENGINE GROUP

_____ Remove cowling and wash down engine.
_____ Drain engine oil (912 engine).
_____ Check drain plug for metal particles.
_____ Remove and cut open oil filter-inspect for metal.
_____ Drain gearbox oil.
_____ Check drain plug for metal particles.
_____ Remove spinner and re-torque prop bolts.
_____ Check prop blades for nicks, splits or other damage.
_____ Check spinner and bulkhead for cracks.
_____ Clean and re-gap or replace spark plugs.
_____ Check compression.
_____ Check ignition leads for security and condition.
_____ Check exhaust system for cracks, leaks and security.
_____ Clean or replace air cleaner(s).
_____ Check carburetors for position and security.
_____ Check throttle linkage for condition and operation.
_____ Remove and clean float bowls.
_____ Check choke cables for condition and operation.
_____ Check fuel and primer hoses for condition and security.
_____ Check rotary valve lubrication system tank and hoses for condition and security (582 engine).
_____ Check oil injection system tank and hoses for condition and security (582 engine).
_____ Check oil tank and hoses for condition and security (912 engine).
_____ Disassemble engine shock mount assemblies and inspect rubber bushings. Replace if deteriorated.
_____ Check engine mount weldment for cracks and distortion.
_____ Turn fuel valve off. Remove and clean gascolator bowl and screen.
_____ Check EGT and water temp probes and wiring for security and condition.
_____ Check alternator wiring for security and condition.
_____ Check all coolant lines and hoses. Replace hoses if deteriorated. Tighten all hose clamps.
_____ Drain and replace coolant
_____ Check radiator for security and condition.

FUSELAGE GROUP

_____ Check rudder pedals and brake master cylinders for security and condition.
_____ Remove seat upholstery and seat, kick panels, and rear fuselage trim panel.
_____ Check aileron control system for condition and operation. Replace hardware as necessary to keep free play to an absolute minimum.
_____ Check flap control system for condition and operation.
_____ Check elevator control system for condition and operation.
_____ Lubricate all rod ends, swivel fittings, bearings and hinge bolts.
_____ Check seat belts for fraying and secure attachment.
_____ Check door hinges and latches for condition and operation.
_____ Check windows and windshield for cracks and security.
_____ Check fuel filler cap for condition and marking.
_____ Check fuel valves for proper operation and markings.
_____ Check fuel quantity gauges for operation and markings.
_____ Check fuel lines for proper routing, condition and security. Replace fuel hoses at rear spar if kinked or deteriorated.
_____ Check instrument panel for secure mounting.
_____ Check engine and flight instruments for operation and markings.
_____ Check pitot system plumbing for condition and security.
_____ Check instrument panel wiring for condition and security.
_____ Remove and clean battery and check electrolyte level.
_____ Clean battery box and check for secure mounting.
_____ Check battery box area for evidence of corrosion or acid overflow spillage.
_____ Check battery/solenoid wiring for condition and security.
_____ Check radio installation and antennas for condition and security.
_____ Check condition of fabric covering and finish.

UNDERCARRIAGE GROUP

_____ Check shock cords for proper tension and fraying.
_____ Take weight off of gear legs and check for play at attach fittings.
_____ Check gear legs for distortion and damage.
_____ Check brake system for fluid leaks.
_____ Check brake pads for wear and discs for scoring.
_____ Check tires for wear and inflation.
_____ Check wheel bearings for end play and smooth rotation. Clean, inspect and repack if wheels are removed.
_____ Take weight off tail wheel and check swivel operation.
_____ Check tailwheel spring for distortion and damage.

_____ Check spring mounting bolts for proper torque.
_____ Check spring attach angles on fuselage for cracks and distortion.
_____ Check tailwheel bearings for end play and smooth rotation.
_____ Check steering springs and chains for condition and security.

EMPENNAGE GROUP

_____ Check elevator hinge pins and bushings for excessive play.
_____ Check rudder hinge pins and bushings for excessive play.
_____ Check all hinge pins for condition of cotter pins.
_____ Check stabilizer mounting bolts for proper torque.
_____ Check stabilizer struts for distortion and damage.
_____ Check strut hardware for condition and security.
_____ Check fabric covering of tail surfaces.

WING GROUP

_____ Remove all inspection panels and check interior of wing structure.
_____ Check top surface of wing for wrinkles and irregularities that would indicate rib or spar damage.
_____ Check wingtips for security and condition.
_____ Check rear spar to fuselage hinge bolt and fittings for wear and security.
_____ Check front spar lock pins and fittings for wear and security.
_____ Check lift strut to fuselage hinge bolts and fittings for wear and security. Replace bolts if wings are folded often.
_____ Check lift struts for distortion and damage.
_____ Check strut to spar fitting bolts for proper torque.
_____ Check fuel filler caps for condition and marking.
_____ Check flaperon hinge brackets for cracks and damage.
_____ Check flaperon horns for condition and security.

MISCELLANEOUS

_____ Check for proper display of airworthiness certificate and registration.
_____ Check for proper display of "Experimental" marking and passenger warning markings.

BEFORE THE FIRST FLIGHT

Before the initial flight, the KITFOX™ must be inspected and approved for flight by an FAA inspector (or designee). It is a good idea to work closely with the inspector during construction for he will have many good tips and advice about home-built aircraft and their construction. The inspector can also supply you with a Suggested Inspection Checklist For Amateur Built Aircraft.

DOCUMENTATION

Useful Publications

A good source for more complete information about licensing and regulation of homebuilt aircraft is: How to License a Homebuilt Aircraft, by Paul Bergen Abbott.

Take the time to develop an orderly and systematic flight test program. The U.S. Department of Transportation (FAA) publishes a comprehensive Advisory Circular titled Amateur-Built Aircraft Flight Testing Handbook. It contains checklists and outlines a complete test program. We strongly recommend each builder order a copy and use it to develop his test program.
Order yours by writing to: Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Ask for AC No: 90-89 .

Log Book - You must prepare a log book before inspection of your aircraft by the FAA. Use it to record identifying information and any maintenance and repairs.

Instrumentation - Certain instruments must be installed in your aircraft before you fly it. Those required in the KITFOX™ in the U.S. include airspeed indicator, altimeter, compass, tachometer, engine temperature gauge, fuel quantity indicator and for the 912 engine, an oil pressure gauge.

Markings -

'N' Number - your KITFOX™ must be marked with its registration number before inspection.

Experimental - because it is licensed in the "experimental" category, it must also be marked EXPERIMENTAL, according to U.S. regulations.

I.D. Plate - Every aircraft in the U.S. must carry a fireproof identification plate engraved with the builder's name and other required information about the aircraft.

On-Board Documentation - In the U.S., the F.A.A. requires certain documents to be carried on all flights. An acronym that will help you remember them is A.R.R.O.W.

A - Airworthiness Certificate
R - Registration
R - Radio License
O - Owner's Manual
W - Weight and Balance Computation

Airworthiness Certificate - This document is issued by the FAA when your aircraft passes final inspection. The FAA will also issue a certificate of Operating Limitations. The aircraft must be registered with the FAA before they inspect it. They will issue you a registration number (N-number in the U.S.)

Registration - You must carry a certificate of registration from the FAA. You should apply for your N - number and register your KITFOX™ during construction, so you will have the number when you paint the aircraft.

Radio License - If your aircraft has a radio, you should have an FCC Radio Station License on board. Apply to the Federal Communications Commission for it.

Owner's Manual - Carry this Owner's Manual or one that you have compiled.

Weight and Balance - The Weight and Balance sheet shows the exact weight of the airplane and the allowable location of the Center of Gravity. It is very important that the C.G. be within allowable limits for the first and all subsequent flights. The Weight and Balance section of the construction manual outlines the procedure for weighing the aircraft and calculating the location of the Center of Gravity.

EXTERIOR INSPECTION

- KITFOX -

PRE-FLIGHT CHECK LIST

Conduct a thorough walk-around inspection in accordance with the figure.

CHECK:

1. a. Key start switch "OFF" and ignition toggle switches "OFF"
   b. Wing tank and header tank fuel shutoff valve "OPEN" (horizontal position).
   c. Control stick for free and proper movement of control surfaces (flaperons and elevator).
   d. Look behind the seat and inspect the control system. Look for loose jamb nuts, missing or loose cotter pins, cracks in bellcranks or any other parts, chaffed or frayed rudder cables, excessive "play" in any hinge point or rod end.
   e. Throttle reverser bellcrank and its control cables.
   f. Radiator for damage or coolant leaks.
   g. Bungee cord for wear, fraying, or looseners.
2. a. Left front spar clevis pin and its safety pin.
   b. Fuel level in LH wing tank and the filler cap.
   c. Drain and check sample from wing tank quick-drain.
   d. LH main tire for proper inflation (9 psi) and hydraulic lines for leaks.
3. a. Cowling fasteners for proper installation and security.
   b. Propeller and spinner for nicks and security.
   c. Gascolator. Drain and check fuel sample for water and sediment.
   d. Oil level.
4. a. Right front spar clevis pin and its safety pin.
   b. RH main tire for proper inflation and hydraulic lines for leaks.
   c. Fuel level in RH wing tank and the filler cap.
   d. Drain and check sample from wing tank quick-drain.
   e. RH lift struts and attach bolts.
   f. RH leading edge and RH wing tip for damage.
5. a. RH flaperon control horn, flaperon hinges and flaperons for damage.
   b. RH flaperon for freedom of movement.
6. a. Turtle deck and fasteners.
   b. Fabric on fuselage top, sides, and belly.
   c. Vertical and horizonal stabilizers.
   d. Horizontal stabilizer braces and their attach points.
7. a. Rudder and elevator control surfaces for freedom of movement and clevis pin security.
   b. Rudder cable connections and chain connections to tailwheel.
8. a. LH Flaperon control horn, flaperon hinges, and flaperons for damage.
   b. LH flaperon for freedom of movement.
9. Check LH wing tip for damage.

Before Starting the Engine

1. Check the brakes and rudder pedal travel.
2. Fasten and adjust seat belt and shoulder harness.

3. Recheck main fuel valve and/or appropriate wing tank valve "on".

Starting the Engine

1. Brakes "ON".
2. Primer -- as required (4-5 pumps).
3. Choke or primer as required.
4. Throttle -- idle.
5. Clear prop.
6. Ignition switch -- "START".
7. Monitor EGT and Coolant Temperature indication.

Warm-Up

Run the engine at the minimum speed necessary for smooth operation, not less than 3 minutes in hot weather or 4 minutes in cold weather. Coolant temperature should reach at least 120°F before runnup.

Before Take-Off Checklist - C.I.G.A.R.T.I P.

C - Controls free
I - Interior - doors latched, seatbelts fastened, cargo lashed, etc.
G - Gas - fuel quantity OK, appropriate valves open.
A - Altimeter - set
R - Run-up - ignition check
T - Trim - flaps as required
I - Instruments - coolant temp. 120°F minimum
P - Pattern - check traffic

Flight Procedures

1. Normal Take-Off
   a. Wing flaps -- up
   b. Throttle -- full "OPEN"
   c. Apply forward pressure on control stick to lift tail wheel at 15-20 mph. (Anticipate swerving to right by applying slight left rudder, Rotax 582LC)
   d. Apply slight back pressure at 35-40 mph to lift main wheels and get airborne.
   e. Climb speed -- 55-65 mph.
2. Maximum Performance Take-Off
   a. Wing flaps -- FULL "DOWN"
   b. Brakes -- "HOLD"
   c. Throttle -- Full "Open"
   d. Brakes -- "RELEASE"
   e. Elevator Control Stick -- Slight back pressure until airborne.
   f. Establish positive climb at best angle of climb speed (45 mph)
   g. Lower the nose and maintain climb at best rate of climb speed (55-65 mph)
3. Enroute Climb - Throttle -- Full "OPEN" at 55-75 mph.

4. Normal Landing
   a. Maintain airspeed 50-60 mph on final.
   b. Wing flaps on final -- as desired.
   c. Touchdown -- 3-point landing
   d. Landing Roll -- maintain alignment with rudder and steerable tailwheel.
   e. Braking -- minimum required

5. Balked Landing (Go-Around)
   a. Throttle -- Full "OPEN"
   b. Upon reaching an airspeed of approximately 40 MPH retract flaps slowly.